

Application No. 10/077,601
Filed: February 15, 2002
TC Art Unit: 1756
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AMENDMENT TO THE CLAIMS

1. (Previously Presented) An optical storage medium comprising a polymer having an optically activated molecular transition between a first geometric orientation and a second geometric orientation, the medium being writeable and readable with light at about the same wavelength.
2. (Currently Amended) The optical storage medium of Claim 1 wherein the wavelength ~~band~~ comprises an absorption band of the polymer material.
3. (Previously Presented) The optical storage medium of Claim 1 wherein the polymer material comprises a solid state thin film material having a holographic grating.
4. (Previously Presented) The optical storage medium of Claim 1 wherein the polymer material comprises an azobenzene isomer material.
5. (Previously Presented) The optical storage medium of Claim 1 wherein the polymer material has a first absorption band in a

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red spectral region and a second absorption band in a blue spectral region.

6. (Previously Presented) The optical storage medium of Claim 1 wherein the polymer material is readable and writeable at the same red wavelength.
7. (Previously Presented) A system for optically recording information in a storage medium comprising a first coherent light source and a second light source that are optically coupled to a storage medium such that the medium is irradiated with coherent light with a first polarization component and irradiated with light from a second light source having a second polarization component to record information with the medium.
8. (Previously Presented) The system of Claim 7 wherein the storage medium comprises a polymer material having an optically activated molecular transition between a first geometric orientation when irradiated by light from the second light source and a second geometric orientation when irradiated by light from the first coherent light source.

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WEINGARTEN, SCHURGIN,
GAGNEBIN & LEBOVICI LLP
TEL. (617) 542-2290
FAX. (617) 451-0313

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9. (Previously Presented) The system of Claim 8 wherein the polymer material comprises a solid state thin film material having a holographic grating.
10. (Previously Presented) The system of Claim 8 wherein the polymer material comprises an azobenzene isomer material.
11. (Previously Presented) The system of Claim 8 wherein the polymer material is readable and writeable at the same wavelength.
12. (Currently Amended) A method for storing information with a non-volatile storage system, comprising the steps of
preilluminating a non-volatile storage medium with polarized light;
illuminating the medium at a first wavelength of light polarized in a first direction;
illuminating the medium at a second wavelength of light polarized in a second direction that is different than the first direction to store information with the medium.

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13. (Previously Presented) The method of Claim 12 wherein the preilluminating step comprises illuminating the medium with circularly polarized light.
14. (Previously Presented) The method of Claim 12 further comprising recording information in the medium by illuminating the medium with the first wavelength and the second wavelength such that the first direction is orthogonal to the second direction.
15. (Previously Presented) The method of Claim 12 wherein the storage medium comprises a polymer material having azobenzene isomer material therein.
16. (Previously Presented) A method for performing reorientation of photoisomeric molecules, comprising the steps:
- illuminating molecules of a polymer film at a first wavelength of light polarized in a first direction to reorient the molecules; and
- illuminating the molecules of the polymer film at a second wavelength of light polarized in a second direction

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that is different than the first direction to further reorient the molecules.

17. (Previously Presented) The method of Claim 16 wherein the light polarized in the first direction is light in a blue spectral region.
18. (Previously Presented) The method of Claim 16 wherein the light polarized in the second direction is light in a red spectral region.
19. (Previously Presented) The method of Claim 16 wherein the first direction is orthogonal to the second direction.
20. (Previously Presented) The method of Claim 16 further comprising a step of preilluminating the photoisomeric molecules with polarized light.
21. (Previously Presented) The method of Claim 16 further comprising a process of poling to enhance at least second order, non-linear optics.

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22. (Previously Presented) The method of Claim 16 wherein the photoisomeric molecules are azobenzene isomer material.
23. (Previously Presented) A method for optically writing information to a medium comprising a polymer material having photoisometric material, comprising the steps of:
- providing a first light with a first polarization component onto the surface of the medium;
 - generating at least one of trans-cis isomerization and molecular reorientation of the photoisomer material;
 - providing a second light with a second polarization component onto the surface of the medium;
 - forming a holographic grating; and
 - generating cis-trans isomerization such that a non-volatile orientation grating is formed.
24. (Previously Presented) The method of Claim 23 wherein the photoisomeric material is an azobenzene isomer material.
25. (Previously Presented) The method of Claim 23 wherein the first polarization component has a direction that is

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orthogonal to a direction of the second polarization component.

26. (Previously Presented) The method of Claim 23 wherein the first light is in a blue spectral region.
27. (Previously Presented) The method of Claim 23 wherein the second light is in a red spectral region.
28. (Previously Presented) A non-volatile optical storage medium comprising a polymer material having an optically activated molecular transition between a first geometric orientation and a second geometric orientation, the non-volatile medium being writeable and readable with light.
29. (Previously Presented) The storage medium of Claim 28 wherein the medium is writeable and readable with light of the same color.
30. (Previously Presented) The storage medium of Claim 29 wherein the medium is writeable and readable with a red laser.

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31. (Previously Presented) The storage medium of Claim 28 wherein the medium comprises an azobenzene isomer material.

32. (Previously Presented) The storage medium of Claim 28 wherein the medium is writeable and readable at the same wavelength of light.